CLAIM AMENDMENTS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (previously presented) A carrier for transporting a polyanionic macromolecule across a membrane of a cell comprising:

a biocompatible hydrophilic backbone polymer; and

two or more polycationic polymers covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

2. (original) The carrier of claim 1, wherein the biocompatible hydrophilic backbone is selected from the group consisting of polyethylene glycol (PEG), poly (N-(2-hydroxylpropyl)methacrylamide), and copolymers thereof.

3. (original) The carrier of claim 2, wherein the polycationic polymers are polyethylenimine (PEI).

4. (original) The carrier of claim 1, wherein the polycationic polymers are selected from the group consisting of polyalkylamine (PAM), polyethylenimine (PEI), polylysine (PL), a polypeptide, chitosan, a polysaccharide, and copolymers thereof.

5. (original) The carrier of claim 1, further comprising at least one targeting moiety connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers.

6. (original) The carrier of claim 5, wherein the targeting moiety is selected from the group consisting of a ligand, an antigen, a hapten, biotin, lectin, galactose, galactosamine, a protein, a histone, a polypeptide, a lipid, a carbohydrate, a vitamin, and a combination thereof.

7. (original) The carrier of claim l, further comprising at least one lysis agent connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers.

8. (previously presented) The carrier of claim 7, wherein the at least one lysis agent is selected from the group consisting of a viral peptide, a bacterial toxin, a lytic peptide, aleveolysin, bifermentolysin, boutulinolysin, capriciolysin, cereolysin O, chauveolysin, histolyticolysin O, pneumolysin, sealigerolysin, septicolysin O, sordellilysin, streptoslysin O, tenaolysin or thuringolysin O, and active fragments thereof.

9. (previously presented) The carrier of claim 1, wherein the linkers are about 2 to about 100 atoms in length.

10. (previously presented) The carrier of claim 9, wherein the linkers are selected from the group consisting of a hydrocarbon chain, a PEG fragment, a polypeptide, a linear polymer containing an ester bond, a linear polymer containing an amide bond, a linear polymer containing a disulfide bond, a linear polymer containing a hydrozone bond, and a linear polymer containing an oxime bond.

11. (previously presented) The carrier of claim 9, wherein the linkers are about 3 atoms to about 30 atoms in length.

12. (previously presented) The carrier of claim 1, wherein the biocompatible hydrophilic backbone has a molecular weight in the range from about 1,000 to about 1,000,000 daltons and the polycationic polymers have a molecular weight in the range from about 100 to about 100,000 daltons.

13. (previously presented) The carrier of claim 12, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 5,000 to about 100,000 daltons.

14. (previously presented) The carrier of claim 12, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 20,000 to about 40,000 daltons.

15. (previously presented) The carrier of claim 12, wherein the molecular weight of the polycationic polymers is in the range from about 200 to about 10,000 daltons.

16. (previously presented) The carrier of claim 12, wherein the molecular weight of the polycationic polymers is in the range from about 400 to about 2,000 daltons.

17. (currently amended) The carrier of claim 1, wherein the biocompatible hydrophilic backbone is polyethylene glycol and the polycationic polymers ~~is~~ are polyethylenimine.

18. (previously presented) The carrier of claim 17, wherein from about 4 to about 100 polycationic polymers are covalently linked to the biocompatible backbone polymer by linkers.

19. (previously presented) The carrier of claim 17, wherein from about 8 to about 15 polycationic polymers are covalently linked to the biocompatible backbone polymer by linkers.

20. (previously presented) The carrier of claim 17, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 20,000 to about 40,000 daltons.

21. (previously presented) The carrier of claim 17, wherein the molecular weight of polycationic polymers is in the range from about 400 to about 2,000 daltons.

22. (previously presented) The carrier of claim 17, wherein the linkers are selected from the group consisting of a hydrocarbon chain, a PEG fragment, a polypeptide, a linear polymer containing an ester bond, a linear polymer containing an amide bond, a linear polymer containing a disulfide bond, a linear polymer containing a hydrozone bond, and a linear polymer containing an oxime bond.

23. (original) The carrier of claim 17, further comprising at least one targeting moiety connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers.

24. (original) The carrier of claim 23, wherein the targeting moiety is selected from the group consisting of a ligand, an antigen, a hapten, biotin, lectin, galactose, galactosamine, a protein, a histone, a polypeptide, a lipid, a carbohydrate, a vitamin, and a combination thereof.

25. (original) The carrier of claim 17, further comprising at least one lysis agent connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers.

26. (original) The carrier of claim 25, wherein the at least one lysis agent is selected from the group consisting of a viral peptide, a bacterial toxin, a lytic peptide, aleveolysin, bifermentolysin, boutulinolysin, capriciolysin, cereolysin O, chauveolysin, histolyticolysin O, pneumolysin, sealigerolysin, septicolysin O, sordellilysin, streptoslysin O, tenaolysin or thuringolysin O, and active fragments thereof.

27. (previously presented) The carrier of claim 17, comprising a linker which is a biodegradable peptide.

28. (previously presented) The carrier of claim 1, wherein from about 4 to about 100 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

29. (previously presented) The carrier of claim l, wherein from about 8 to about 15 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

30. (currently amended) The carrier of claim 25, wherein the biodegradable peptide is selected from the group consisting of G1yPhePheGly (SEQ ID NO.2) and GlyPheLeuGly (SEQ ID NO.1).

31. (previously presented) A complex for transporting a polyanionic macromolecule across a membrane of a cell comprising:

a carrier molecule for delivering the polyanionic macromolecule to the cell, the carrier molecule comprising a biocompatible hydrophilic backbone polymer and two or more polycationic polymers covalently linked to the biocompatible hydrophilic backbone polymer by linkers; and

a polyanionic macromolecule complexed with the carrier molecule.

32. (original) The complex of claim 31, wherein the polyanionic macromolecule is a nucleic acid.

33. (original) The complex of claim 32, wherein the polycationic polymers are PEI.

34. (original) The complex of claim 33, wherein the biocompatible hydrophilic backbone polymer is PEG.

35. (original) The complex of claim 33, wherein the biocompatible hydrophilic backbone polymer is HPMA.

36. (original) The complex of claim 32, wherein the nucleic acid is selected from the group consisting of genomic DNA, plasmid DNA, synthetic DNA, and RNA.

37. (original) The complex of claim 32, wherein the nucleic acid is selected from the group consisting of an antisense oligonucleotide, ribozyme, DNAzyme, chimeric RNA/DNA oligonucleotide, phosphorothioate oligonucleotide, 2'-O-methyl

oligonucleotide, DNA-PNA conjugate, DNA-morpholino-DNA conjugate, and a combination thereof.

38. (previously presented) The complex of claim 31, wherein the biocompatible hydrophilic backbone has a molecular weight in the range from about 1,000 daltons to about 1,000,000 daltons and the polycationic polymers have a molecular weight in the range from about 100 daltons to about 100,000 daltons.

39. (previously presented) The complex of claim 38, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 20,000 daltons to about 40,000 daltons.

40. (previously presented) the complex of claim 39, wherein the molecular weight of the polycationic polymers is in the range from about 400 daltons to about 2,000 daltons.

41. (previously presented) The complex of claim 31, wherein the linkers are selected from the group consisting of a hydrocarbon chain, a PEG fragment, a polypeptide, a linear polymer containing an ester bond, a linear polymer containing an amide bond, a linear polymer containing a disulfide bond, a linear polymer containing a hydrozone bond, and a linear polymer containing an oxime bond.

42. (original) The complex of claim 31, wherein the biocompatible hydrophilic backbone is selected from the group consisting of polyethylene glycol (PEG), poly (N-(2-hydroxylpropyl)methacrylamide), and copolymers thereof.

43. (original) The complex of claim 42, wherein the polycationic polymers are selected from the group consisting of polyalkylamine (PAM), polyethylenimine (PEI), polylysine (PL), a polypeptide, chitosan, a polysaccharide, and copolymers thereof.

44. (original) The complex of claim 31, further comprising at least one targeting moiety connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers, the at least one targeting moiety selected from the group consisting of a ligand, an antigen, a hapten, biotin, lectin, galactose, galactosamine, a protein, a histone, a polypeptide, a lipid, a carbohydrate, and a combination thereof.

45. (original) The complex of claim 31, further comprising at least one lysis agent connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers, the at least one lysis agent selected from the group consisting of a viral peptide, a bacterial toxin, a lytic peptide, aleveolysin, bifermentolysin, boutulinolysin, capriciolysin, cereolysin O, chauveolysin, histolyticolysin O, pneumolysin, sealigerolysin, septicolysin O, sordellilysin, streptoslysin O, tenaolysin or thuringolysin O, and active fragments thereof.

46. (previously presented) The complex of claim 31, wherein from about 4 to about 100 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

47. (previously presented) The complex of claim 31, wherein from about 8 to about 15 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

48. (currently amended) A method of transporting a polyanionic macromolecule across a membrane of a cell comprising:

(a) complexing the polyanionic macromolecule to a carrier molecule to create a complex, the carrier molecule comprising a biocompatible hydrophilic backbone polymer and two or more polycationic ~~polymer~~ polymers covalently linked to the biocompatible hydrophilic backbone polymer by linkers; and

(b) contacting the cell with the complex.

49. (original) The method of claim 48, wherein the biocompatible hydrophilic backbone is selected from the group consisting of polyethylene glycol (PEG), poly (N-(2-hydroxylpropyl)methacrylamide), and copolymers thereof.

50. (original) The method of claim 49, wherein the polycationic polymers are selected from the group consisting of polyalkylamine (PAM), polyethylenimine (PEI), a polylysine (PL), a polypeptide, chitosan, a polysaccharide, and copolymers thereof.

51. (original) The method of claim 48, further comprising at least one targeting moiety connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers, the targeting moiety selected from the group consisting of a ligand, an antigen, a hapten, biotin, lectin, galactose, galactosamine, a protein, a histone, a polypeptide, a lipid, a carbohydrate, and a combination thereof.

52. (original) The method of claim 48, further comprising at least one lysis agent connected to the biocompatible hydrophilic backbone or to one of the two or more polycationic polymers, the at least one lysis agent selected from the group consisting of a viral peptide, a bacterial toxin, a lytic peptide, aleveolysin, bifermentolysin, boutulinolysin, capriciolysin, cereolysin O, chauveolysin, histolyticolysin O, pneumolysin, sealigerolysin, septicolysin O, sordellilysin, streptoslysin O, tenaolysin or thuringolysin O, and active fragments thereof.

53. (previously presented) The method of claim 48, comprising a linker which is from about 2 to about 100 atoms in length.

54. (previously presented) The method of claim 53, wherein the the linkers are selected from the group consisting of a hydrocarbon chain, a PEG fragment, a polypeptide, a linear polymer containing an ester bond, a linear polymer containing an amide bond, a linear polymer containing a disulfide bond, a linear polymer containing a hydrozone bond, and a linear polymer containing an oxime bond.

55. (previously presented) The method of claim 53, comprising a linker which is a biodegradable peptide.

56. (currently amended) The method of claim 55, wherein the biodegradable peptide is selected from the group consisting of GlyPhePheGly (SEQ ID NO.2) and GlyPheLeuGly (SEQ ID NO.1).

57. (previously presented) The method of claim 48, wherein the biocompatible hydrophilic backbone has a molecular weight in the range from about 1,000 to about 1,000,000 daltons and the polycationic polymers have a molecular weight in the range from about 100 to about 100,000 daltons.

58. (previously presented) The method of claim 57, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 20,000 to about 40,000 daltons.

59. (previously presented) The method of claim 57, wherein the molecular weight of the polycationic polymers is in the range from about 400 to about 2,000 daltons.

60. (original) The method of claim 57, wherein the biocompatible hydrophilic backbone is polyethylene glycol and the polycationic polymers are polyethylenimine.

61. (previously presented) The method of claim 60, wherein the molecular weight of the biocompatible hydrophilic backbone is in the range from about 20,000 to about 40,000 daltons.

62. (previously presented) The method of claim 60, wherein the molecular weight of the polycationic polymers is in the range from about 400 to about 2,000 daltons.

63. (previously presented) The method of claim 48, wherein from about 4 to about 100 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

64. (previously presented) The method of claim 48, wherein from about 8 to about 15 polycationic polymers are covalently linked to the biocompatible hydrophilic backbone polymer by linkers.

65. (withdrawn) A method of making a carrier for transporting a polycationic macromolecule across a membrane of a cell comprising covalently linking two or more polycationic polymers to a biocompatible hydrophilic polymer backbone by linkers.

66. (withdrawn) The method of claim 65, wherein the biocompatible hydrophilic polymer backbone is selected from the group consisting of polyethylene glycol (PEG), poly (N-(2-hydroxylpropyl)methacrylamide), and copolymers thereof.

67. (withdrawn) The method of claim 65, wherein the polycationic polymers are polyethylenimine (PEI).

68. (withdrawn) The method of claim 65, wherein the polycationic polymers are selected from the group consisting of polyalkylamine (PAM), polyethylenimine (PEI), polylysine (PL), a polypeptide, chitosan, a polysaccharide, and copolymers thereof.

69. (withdrawn) The method of claim 65, wherein at least one targeting moiety is connected to the biocompatible hydrophilic polymer backbone or to one of the two or more polycationic polymers.

70. (withdrawn) The method of claim 69, wherein the targeting moiety is selected from the group consisting of a ligand, an antigen, a hapten, biotin, lectin, galactose, galactosamine, a protein, a histone, a polypeptide, a lipid, a carbohydrate, a vitamin, and a combination thereof.

71. (withdrawn) The method of claim 65, wherein at least one lysis agent is connected to the biocompatible hydrophilic polymer backbone or to one of the two or more polycationic polymers.

72. (withdrawn) The method of claim 71, wherein the at least one lysis agent is selected from the group consisting of a viral peptide, a bacterial toxin, a lytic peptide, aleveolysin, bifermentolysin, boutulinolysin, capriciolysin, cereolysin O, chauveolysin, histolyticolysin O, pneumolysin, sealigerolysin, septicolysin O, sordellilysin, streptoslysin O, tenaolysin or thuringolysin O, and active fragments thereof.

73. (withdrawn) The method of claim 65, comprising a linker which is from about 2 to about 100 atoms in length.

74. (withdrawn) The method of claim 73, comprising a linker which is from about 3 to about 30 atoms.

75. (withdrawn) The method of claim 65, wherein the linkers are selected from the group consisting of a hydrocarbon chain, a PEG fragment, a polypeptide, a linear polymer containing an ester bond, a linear polymer containing an amide bond, a linear polymer containing a disulfide bond, a linear polymer containing a hydrozone bond, and a linear polymer containing an oxime bond.

76. (withdrawn) The method of claim 65, wherein the biocompatible hydrophilic polymer backbone has a molecular weight in the range from about 1,000 to about 1,000,000 daltons and the polycationic polymers have a molecular weight in the range from about 100 to about 100,000 daltons.

77. (withdrawn) The method of claim 65, wherein the molecular weight of the biocompatible hydrophilic polymer backbone is in the range from about 5,000 to about 100,000 daltons.

78. (withdrawn) The method of claim 77, wherein the molecular weight of the biocompatible hydrophilic polymer backbone is in the range from about 20,000 to about 40,000 daltons.

79. (withdrawn) The method of claim 65, wherein the molecular weight of the polycationic polymers in the range from about 200 to about 10,000 daltons.

80. (withdrawn) The method of claim 79, wherein the molecular weight of the polycationic polymers in the range from about 400 to about 2,000 daltons.

81. (withdrawn) The method of claim 65, wherein the biocompatible hydrophilic polymer backbone is polyethylene glycol and the polycationic polymers are polyethylenimine.

82. (withdrawn) The method of claim 65, wherein from about 4 to about 100 polycationic polymers are covalently linked to the biocompatible hydrophilic polymer backbone by linkers.

83. (withdrawn) The method of claim 82, wherein from about 8 to about 15 polycationic polymers are covalently linked to the biocompatible hydrophilic polymer backbone by linkers.